

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平8-154273

(43) 公開日 平成8年(1996)6月11日

(51) Int.Cl.<sup>6</sup>

識別記号

庁内整理番号

F I

技術表示箇所

H 0 4 Q 7/38

H 0 4 B 7/ 26

1 0 9 H

審査請求 未請求 請求項の数 5 O L (全 4 頁)

(21) 出願番号 特願平6-293536  
 (22) 出願日 平成6年(1994)11月28日

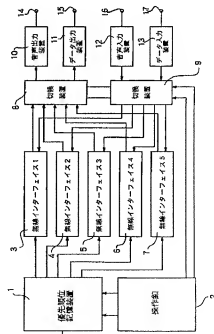
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(54) 【発明の名称】 無線装置

(57) 【要約】

【目的】 通信手順が異なる複数の無線基地局と無線通信を効率よく行うことが出来る無線装置を提供する。

【構成】 基地局との間で無線インタフェースを介して所定の通信手順に従って無線通信を行う無線装置であって、複数の無線インタフェース 3、4、5、6、7 を具備し、操作キー 2、音声入出力手段 10、12、データ入出力手段 11、13、表示手段 18 のいずれか、又は全てが、具備している幾つかの無線インタフェース 3、4、5、6、7 を用い通信を行う際に、共通に使用可能であることを特徴とする無線装置。



**【特許請求の範囲】**

【請求項 1】 基地局との間で無線インタフェースを介して所定の通信手順に従って無線通信を行う無線装置であって、無線インタフェースを複数具備するとともに、操作キー、音声入出力手段、データ入出力手段、表示手段のいずれか、又は全てが、具備している幾つかの無線インタフェースを用い通信を行う際に、共通に使用可能であることを特徴とする無線装置。

【請求項 2】 上記請求項 1 の無線装置において、無線インタフェースの優先順位を登録する手段を具備し、通信開始時に優先順位の最も高い無線インタフェースを自動的に起動し、通信を開始することを特徴とする無線装置。

【請求項 3】 上記請求項 1 の無線装置において、通信内容（音声、データ等）毎に無線インタフェースの優先順位を登録する手段を具備し、通信開始時に通信内容を選択すると、その通信内容における最も優先順位の高い無線インタフェースを自動的に起動し、通信を開始することを特徴とする無線装置。

【請求項 4】 上記請求項 2、及び、3 の無線装置において、通信開始時に優先順位の最も高い無線インタフェースを自動的に選択し通信を開始した際、あるいは、特定の無線インタフェースを選択して通信を開始した際に通信が不可能な場合、その無線インタフェースでの通信を停止し、自動的に次に高い優先順位の無線インタフェースを起動し通信を開始することを特徴とする無線装置。

【請求項 5】 上記請求項 2、及び、3 の無線装置において、通信開始時に自動的に通信料金の最も安価な無線インタフェースにより通信を開始し、通信不能の場合、自動的に次に通信料金の安価な無線インタフェースを起動して通信を開始することを特徴とする無線装置。

**【発明の詳細な説明】****【0001】**

【産業上の利用分野】 本発明は、無線装置に関する。

**【0002】**

【従来の技術】 携帯電話に代表されるような移動体通信においては、各無線装置は無線基地局との間で予め定められた通信手順によって通信が行われる。このような通信手順には、たとえば電波システム開発センターが発行している RCR STD-27「デジタル方式自動車電話システム」や、RCR STD-28「第二世代コードレス電話システム標準規格」等がある。現在のところこのような規格に従って無線通信を行うための個別の無線インタフェースを備えた無線装置は存在するが、今後、複数の無線インタフェースを備えた無線装置が開発されるものと思われる。

【0003】 このような複数の無線インタフェースを有

無線インタフェースが通信不能の場合、再度、ダイヤル操作などの通信を開始する動作（以降発呼動作と呼ぶ）を行う必要がある。

**【0004】**

【発明が解決しようとする課題】 複数の無線インタフェースを有する無線装置では、通信を開始する毎に使用する無線インタフェースを選択する必要がある。この場合、選択される無線インタフェースは、通信内容により決まっている場合が多く（例えば、音声通信では最も料金が安いもの、データ通信では最も伝送速度が高いものなど）、通信開始時に毎回選択することは合理的ではない。

【0005】 また、選択した無線インタフェースが通信不能の場合、異なる無線インタフェースを選択し直して、再度、ダイヤル操作などの通信を開始する動作（以降発呼動作と呼ぶ）を行う必要がある。この場合も次に選択される無線インタフェースが決まっている場合が多く、再度、同じ操作を行うことは合理的ではない。

**【0006】**

【課題を解決するための手段】 上記課題に鑑み本発明による無線装置は、基地局との間で無線インタフェースを介して所定の通信手順に従って無線通信を行う無線装置であって、無線インタフェースを複数具備するとともに、操作キー、音声入出力手段、データ入出力手段、表示手段のいずれか、又は全てが、具備している幾つかの無線インタフェースを用い通信を行う際に、共通に使用可能であることを特徴とするものである。

【0007】 また、無線インタフェースの優先順位を登録する手段を具備し、通信開始時に優先順位の最も高い無線インタフェースを自動的に起動し、通信を開始することを特徴とするものである。

【0008】 また、通信内容（音声、データ等）毎に無線インタフェースの優先順位を登録する手段を具備し、通信開始時に通信内容を選択すると、その通信内容における最も優先順位の高い無線インタフェースを自動的に起動し、通信を開始することを特徴とするものである。

【0009】 また、通信開始時に優先順位の最も高い無線インタフェースを自動的に選択し通信を開始した際、あるいは、特定の無線インタフェースを選択して通信を開始した際に通信が不可能な場合、その無線インタフェースでの通信を停止し、自動的に次に高い優先順位の無線インタフェースを起動し通信を開始することを特徴とするものである。

【0010】 さらに、通信開始時に自動的に通信料金の最も安価な無線インタフェースにより通信を開始し、通信不能の場合、自動的に次に通信料金の安価な無線インタフェースを起動して通信を開始することを特徴とするものである。

された優先順位に従って使用する無線インタフェースが自動的に選択されるため、通信毎に無線インタフェースを選択する手間も省け、又、誤って不適切な無線インタフェースを選択する危険もなくなり非常に合理的である。また、選択した無線インタフェースが通信不能の場合でも、自動的に異なる無線インタフェースを選択し直すため、再度、発呼動作を行う手間を省くことができ利便性を高めることができる。

#### 【0012】

【実施例】図1は本発明の1実施例を示す図である。図に於て、1は優先順位記憶装置、2はキー、3は無線インタフェース装置1、4は無線インタフェース装置2、5は無線インタフェース装置3、6は無線インタフェース装置4、7は無線インタフェース装置5、8、9は切換装置、10は音声出力装置、11はデータ出力装置、12は音声入力装置、13はデータ入力装置、14は音声出力端子、15はデータ出力端子、16は音声入力端子、17はデータ入力端子、18は表示装置である。ここで、無線インタフェース装置1〜5は、無線回路やデジタル信号処理回路、あるいは、ソフトウェアなどを具備しており、各々異なる無線インタフェースに対応して通信を行うための機能を有した装置である。

#### 【0013】次に動作について説明する。

【0014】まず、通信を開始する前に、音声通信、データ通信各々について、無線インタフェースに優先順位を付け、優先順位記憶装置にその順位を記憶する。ここで、優先順位の付け方としては、料金、伝送速度、通信品質などを基準に行うことができる。例えば、音声通信では、料金が安い順に優先順位を高くする、又、データ通信では、通信品質が高い順に優先順位を高くするなどして優先順位記憶装置に記憶させる。

#### 【0015】次に、通信開始時の動作について説明する。

【0016】通信を開始する時、通信内容（音声通信、データ通信）を選択し、キーによりダイヤル入力等の発呼動作を行うと、優先順位記憶装置から予め記憶しておいた優先順位に従って無線インタフェース装置を選択し、選択した無線インタフェース装置に起動信号を送信する。起動信号を受け付けた無線インタフェース装置は、その無線インタフェースの手順に従って、無線基地局との通信を開始する。この時、電波伝搬の状態が良好でない場合や通話エリア外などで通信が不可能な場合、この無線インタフェース装置に停止信号を送信し、通信を停止させると共に次に優先順位の高い無線インタフェース装置に起動信号を送信し、この無線インタフェースにより

無線基地局との通信を開始する。この時点で、通信が可能となった場合、この無線インタフェース装置の入出力信号を切換装置を介して音声入出力装置、あるいは、データ入出力装置に接続し、音声入出力端子、あるいは、データ入出力端子と信号のやりとりを行う。又、同時に表示装置に使用している無線インタフェースを表示する。一方、通信が更に不能の場合は、同様の動作を繰り返していく。

【0017】ここで、順次選択した無線インタフェースが、通信中の呼が多く存在するために通信が不可能になった場合（ビジー状態）は、表示装置にビジー表示を行い、キー等を操作して初めて次の優先順位の無線インタフェースを起動する。

#### 【0018】

【発明の効果】本発明によれば、通信を開始する際、予め登録された優先順位に従って使用する無線インタフェースが自動的に選択されるため、通信毎に無線インタフェースを選択する手間も省け、又、誤って不適切な無線インタフェースを選択する危険もなくなり非常に合理的である。また、選択した無線インタフェースが通信不能の場合でも、自動的に異なる無線インタフェースを選択し直すため、再度、発呼動作を行う手間を省くことができ利便性を高めることができる。

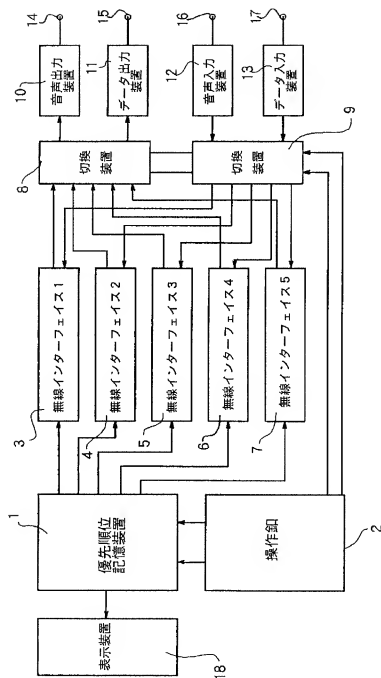
#### 【図面の簡単な説明】

【図1】本発明の実施例を示す図である。

#### 【符号の説明】

- 1 優先順位記憶装置
- 2 操作鍵
- 3 無線インタフェース1
- 4 無線インタフェース2
- 5 無線インタフェース3
- 6 無線インタフェース4
- 7 無線インタフェース5
- 8 切換装置
- 9 切換装置
- 10 音声出力装置
- 11 データ出力装置
- 12 音声入力装置
- 13 データ入力装置
- 14 音声出力端子
- 15 データ出力端子
- 16 音声入力端子
- 17 データ入力端子
- 18 表示装置

【図1】



# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 08-154273

(43)Date of publication of application : 11.06.1996

(51)Int.Cl.

H04Q 7/38

(21)Application number : 06-293536

(71)Applicant : SANYO ELECTRIC CO LTD

(22)Date of filing : 28.11.1994

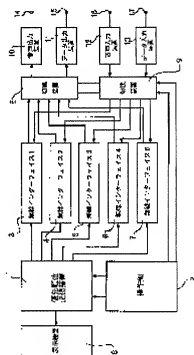
(72)Inventor : IINUMA TOSHINORI

## (54) RADIO EQUIPMENT

### (57)Abstract:

**PURPOSE:** To make radio communication efficient with plural radio base stations whose communication procedures differ by using an operation button and a voice and data input output means or the like in common when communication is made by using plural radio interfaces.

**CONSTITUTION:** When a communication content such as voice communication and data communication or the like is selected and a dial input or the like is sent by an operation button 2, a start signal is sent to a selected device among radio interface devices 3-7. The devices 3-7 receiving the start signal start communication with the radio base station according to the procedure of the radio interface. Through the constitution above, in the case of communication by using the devices 3-7, all or any of the operation button 2, a voice output device 10, a voice input device 12, a data output device 11, a data input device 13 and a display device 18 are used in common. Furthermore, it is desirable to provide a priority storage device 1 starting automatic answering telephone set a radio interface with highest priority registered in advance at the communication start.



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CLAIMS

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## [Claim(s)]

[Claim 1]While being the radio equipment which performs radio according to a predetermined communication procedure via a wireless interface between base stations and providing two or more wireless interfaces, Radio equipment characterized by a thing usable in common when an operation key, a voice input/output means, a data input/output means or a displaying means, or all communicate using some provided wireless interfaces.

[Claim 2]Radio equipment providing a means to register a priority of a wireless interface, in radio equipment of above-mentioned claim 1, starting the highest wireless interface of a priority automatically at the time of a communication start, and starting communication.

[Claim 3]If a means to register a priority of a wireless interface into every communication contents (a sound, data, etc.) is provided in radio equipment of above-mentioned claim 1 and a communication content is chosen at the time of a communication start, Radio equipment starting automatically a wireless interface with the highest priority in the communication content, and starting communication.

[Claim 4]When the highest wireless interface of a priority is automatically chosen at the time of a communication start and communication is started in radio equipment of above-mentioned claims 2 and 3, Or radio equipment suspending communication with the wireless interface, starting a wireless interface of a priority high next automatically, and starting communication when a specific wireless interface is chosen and communication is started, and it cannot communicate.

[Claim 5]Radio equipment starting communication with the cheapest wireless interface of telex rate gold automatically at the time of a communication start, starting a cheap wireless interface of telex rate gold next automatically, and starting communication in radio equipment of above-mentioned claims 2 and 3 when communication is impossible.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention relates to radio equipment.

[0002]

[Description of the Prior Art]Communication is performed in mobile communications which are represented by the cellular phone by the communication procedure by which each radio equipment was beforehand defined between base transceiver stations. There are RCR STD-27 "a digital system automobile telephone system" which Research & Development Center for Radio System has published, for example, RCR STD-28 "second generation cordless telephones system standards", etc. in such a communication procedure. Although the radio equipment provided with the individual wireless interface for performing radio according to such [ at present ] a standard exists, it seems that the radio equipment provided with two or more wireless interfaces will be developed from now on.

[0003]It is necessary to choose the wireless interface used whenever it starts communication in the radio equipment which has such two or more wireless interfaces. When communication of the selected wireless interface is impossible, it is necessary to perform again operation (it is henceforth called calling operation) which starts communication of dial control etc.

[0004]

[Problem(s) to be Solved by the Invention]It is necessary to choose the wireless interface used whenever it starts communication in the radio equipment which has two or more wireless interfaces. In this case, as for the wireless interface chosen, it is not [ having been decided by the communication content in many cases (for example, what has the cheapest fee in voice communication, what has the highest access speed in data communications) ] rational to choose each time at the time of a communication start.

[0005]When communication of the selected wireless interface is impossible, a different



wireless interface is rechosen and it is necessary to perform again operation (it is henceforth called calling operation) which starts communication of dial control etc. It is not rational for the wireless interface chosen as the next also in this case to have been decided in many cases, and to perform the same operation again.

[0006]

[Means for Solving the Problem] While radio equipment by this invention is radio equipment which performs radio according to a predetermined communication procedure via a wireless interface between base stations and providing two or more wireless interfaces in view of an aforementioned problem, When an operation key, a voice input/output means, a data input/output means or a displaying means, or all communicate using some provided wireless interfaces, it is characterized by a thing usable in common.

[0007] A means to register a priority of a wireless interface is provided, the highest wireless interface of a priority is automatically started at the time of a communication start, and communication is started.

[0008] If a means to register a priority of a wireless interface into every communication contents (a sound, data, etc.) is provided and a communication content is chosen at the time of a communication start, a wireless interface with the highest priority in the communication content will be started automatically, and communication will be started.

[0009] When the highest wireless interface of a priority is automatically chosen at the time of a communication start and communication is started, Or when a specific wireless interface is chosen and communication is started, and it cannot communicate, communication with the wireless interface is suspended, a wireless interface of a priority high next is started automatically, and communication is started.

[0010] Communication is automatically started with the cheapest wireless interface of telex rate gold at the time of a communication start, when communication is impossible, a cheap wireless interface of telex rate gold is started next automatically, and communication is started.

[0011]

[Function] A risk of also being able to save the time and effort which chooses a wireless interface for every communication, and choosing an unsuitable wireless interface accidentally, since according to this invention the wireless interface used according to the priority registered beforehand is automatically chosen when starting communication also disappears, and it is very rational \*\*\*\*\* . Since an automatically different wireless interface is rechosen even when communication of the selected wireless interface is impossible, the time and effort which performs calling operation can be saved again, and convenience can be improved.

[0012]

[Example] Drawing 1 is a figure showing one example of this invention. in a figure -- 1 -- priority memory storage and 2 -- a key and 3 -- the wireless interface devices 1 and 4 -- the wireless

interface devices 2 and 5 -- the wireless interface devices 3 and 6 -- the wireless interface devices 4 and 7 -- the wireless interface devices 5, 8, and 9 -- a switching arrangement and 10 -- a speech output unit. 11 -- a data output device and 12 -- as for a data output terminal and 16, a data input unit and 14 are [ a data input terminal and 18 ] displays an audio input terminal and 17 an audio output terminal and 15 a speech input system and 13. Here, the wireless interface devices 1-5 possess a wireless circuit, a digital signal processing circuit, or software. It is a device with the function for communicating corresponding to a respectively different wireless interface.

[0013]Next, operation is explained.

[0014]First, before starting communication, about voice communication and the data communications of each, a priority is attached to a wireless interface and the ranking is memorized to priority memory storage. Here, as how to attach a priority, it can carry out on the basis of a fee, access speed, communication quality, etc. For example, priority memory storage is made to memorize in voice communication by making a priority high at order with a cheap fee, and communication quality making a priority high in data communications at high order.

[0015]Next, the operation at the time of a communication start is explained.

[0016]When starting communication, a seizing signal is transmitted to the wireless interface device which chose the communication content (voice communication, data communications), and chose and chose the wireless interface device according to the priority beforehand memorized from calling operation \*\*\*\* and priority memory storage, such as a dial entry, by the key. The wireless interface device which received the seizing signal starts communication with a base transceiver station according to the procedure of the wireless interface. At this time, the case where the state of radio wave propagation is not good, out of call area, etc., when it cannot communicate, A stop signal is transmitted to this wireless interface device, communication is stopped, and seizing signal transmission is carried out next at the high wireless interface device of a priority, and communication with a base transceiver station is started with this wireless interface. At this time, when communication becomes possible, the input output signal of this wireless interface device is connected to a voice input/output device or a data I/O device via a switching arrangement, and an exchange of a voice input/output terminal or a data input/output terminal, and a signal is performed. The wireless interface currently simultaneously used for a display is displayed. On the other hand, the same operation is repeated when communication is still more nearly impossible.

[0017]Here, since many calls under communication exist in the wireless interface selected one by one, when communication becomes impossible (busy state), the wireless interface of the following priority is started only after performing a busy display to a display and operating a key

etc.

[0018]

[Effect of the Invention]A risk of also being able to save the time and effort which chooses a wireless interface for every communication, and choosing an unsuitable wireless interface accidentally, since according to this invention the wireless interface used according to the priority registered beforehand is automatically chosen when starting communication also disappears, and it is very rational \*\*\*\*\*. Since an automatically different wireless interface is rechosen even when communication of the selected wireless interface is impossible, the time and effort which performs calling operation can be saved again, and convenience can be improved.

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TECHNICAL FIELD

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[Industrial Application]This invention relates to radio equipment.

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PRIOR ART

[Description of the Prior Art]Communication is performed in mobile communications which are represented by the cellular phone by the communication procedure by which each radio equipment was beforehand defined between base transceiver stations. There are RCR STD-27 "a digital system automobile telephone system" which Research & Development Center for Radio System has published, for example, RCR STD-28 "second generation cordless telephones system standards", etc. in such a communication procedure. Although the radio equipment provided with the individual wireless interface for performing radio according to such [ at present ] a standard exists, it seems that the radio equipment provided with two or more wireless interfaces will be developed from now on.

[0003]It is necessary to choose the wireless interface used whenever it starts communication in the radio equipment which has such two or more wireless interfaces. When communication of the selected wireless interface is impossible, it is necessary to perform again operation (it is henceforth called calling operation) which starts communication of dial control etc.

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[Translation done.]

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## EFFECT OF THE INVENTION

[Effect of the Invention]A risk of also being able to save the time and effort which chooses a wireless interface for every communication, and choosing an unsuitable wireless interface accidentally, since according to this invention the wireless interface used according to the priority registered beforehand is automatically chosen when starting communication also disappears, and it is very rational \*\*\*\*\*. Since an automatically different wireless interface is rechosen even when communication of the selected wireless interface is impossible, the time and effort which performs calling operation can be saved again, and convenience can be improved.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention]It is necessary to choose the wireless interface used whenever it starts communication in the radio equipment which has two or more wireless interfaces. In this case, as for the wireless interface chosen, it is not [ having been decided by the communication content in many cases (for example, what has the cheapest fee in voice communication, what has the highest access speed in data communications) ] rational to choose each time at the time of a communication start.

[0005]When communication of the selected wireless interface is impossible, a different wireless interface is rechosen and it is necessary to perform again operation (it is henceforth called calling operation) which starts communication of dial control etc. It is not rational for the wireless interface chosen as the next also in this case to have been decided in many cases, and to perform the same operation again.

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MEANS

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[Means for Solving the Problem]While radio equipment by this invention is radio equipment which performs radio according to a predetermined communication procedure via a wireless interface by Hazama with a base station and providing two or more wireless interfaces in view of an aforementioned problem, When an operation key, a voice input/output means, a data input/output means or a displaying means, or all communicate using some provided wireless interfaces, it is characterized by a thing usable in common.

[0007]A means to register a priority of a wireless interface is provided, the highest wireless interface of a priority is automatically started at the time of a communication start, and communication is started.

[0008]If a means to register a priority of a wireless interface into every communication contents (a sound, data, etc.) is provided and a communication content is chosen at the time of a communication start, a wireless interface with the highest priority in the communication content will be started automatically, and communication will be started.

[0009]When the highest wireless interface of a priority is automatically chosen at the time of a communication start and communication is started, Or when a specific wireless interface is chosen and communication is started, and it cannot communicate, communication with the wireless interface is suspended, a wireless interface of a priority high next is started automatically, and communication is started.

[0010]Communication is automatically started with the cheapest wireless interface of telex rate gold at the time of a communication start, when communication is impossible, a cheap wireless interface of telex rate gold is started next automatically, and communication is started.

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OPERATION

[Function]A risk of also being able to save the time and effort which chooses a wireless interface for every communication, and choosing an unsuitable wireless interface accidentally, since according to this invention the wireless interface used according to the priority registered beforehand is automatically chosen when starting communication also disappears, and it is very rational \*\*\*\*\*. Since an automatically different wireless interface is rechosen even when communication of the selected wireless interface is impossible, the time and effort which performs calling operation can be saved again, and convenience can be improved.

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EXAMPLE

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[Example]Drawing 1 is a figure showing one example of this invention. in a figure -- 1 -- priority memory storage and 2 -- a key and 3 -- the wireless interface devices 1 and 4 -- the wireless interface devices 2 and 5 -- the wireless interface devices 3 and 6 -- the wireless interface devices 4 and 7 -- the wireless interface devices 5, 8, and 9 -- a switching arrangement and 10 -- a speech output unit. 11 -- a data output device and 12 -- as for a data output terminal and 16, a data input unit and 14 are [ a data input terminal and 18 ] displays an audio input terminal and 17 an audio output terminal and 15 a speech input system and 13. Here, the wireless interface devices 1-5 possess a wireless circuit, a digital signal processing circuit, or software. It is a device with the function for communicating corresponding to a respectively different wireless interface.

[0013]Next, operation is explained.

[0014]First, before starting communication, about voice communication and the data communications of each, a priority is attached to a wireless interface and the ranking is memorized to priority memory storage. Here, as how to attach a priority, it can carry out on the basis of a fee, access speed, communication quality, etc. For example, priority memory storage is made to memorize in voice communication by making a priority high at order with a cheap fee, and communication quality making a priority high in data communications at high order.

[0015]Next, the operation at the time of a communication start is explained.

[0016]When starting communication, a seizing signal is transmitted to the wireless interface device which chose the communication content (voice communication, data communications), and chose and chose the wireless interface device according to the priority beforehand memorized from calling operation \*\*\* and priority memory storage, such as a dial entry, by the key. The wireless interface device which received the seizing signal starts communication with

a base transceiver station according to the procedure of the wireless interface. At this time, the case where the state of radio wave propagation is not good, out of call area, etc., when it cannot communicate, A stop signal is transmitted to this wireless interface device, communication is stopped, and seizing signal transmission is carried out next at the high wireless interface device of a priority, and communication with a base transceiver station is started with this wireless interface. At this time, when communication becomes possible, the input output signal of this wireless interface device is connected to a voice input/output device or a data I/O device via a switching arrangement, and an exchange of a voice input/output terminal or a data input/output terminal, and a signal is performed. The wireless interface currently simultaneously used for a display is displayed. On the other hand, the same operation is repeated when communication is still more nearly impossible.

[0017]Here, since many calls under communication exist in the wireless interface selected one by one, when communication becomes impossible (busy state), the wireless interface of the following priority is started only after performing a busy display to a display and operating a key etc.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a figure showing the example of this invention.

[Description of Notations]

- 1 Priority memory storage
- 2 Operating button
- 3 Wireless interface 1
- 4 Wireless interface 2
- 5 Wireless interface 3
- 6 Wireless interface 4
- 7 Wireless interface 5
- 8 Switching arrangement
- 9 Switching arrangement
- 10 Speech output unit
- 11 Data output device
- 12 Speech input system
- 13 Data input unit
- 14 Audio output terminal
- 15 Data output terminal
- 16 Audio input terminal
- 17 Data input terminal
- 18 Display

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[Translation done.]